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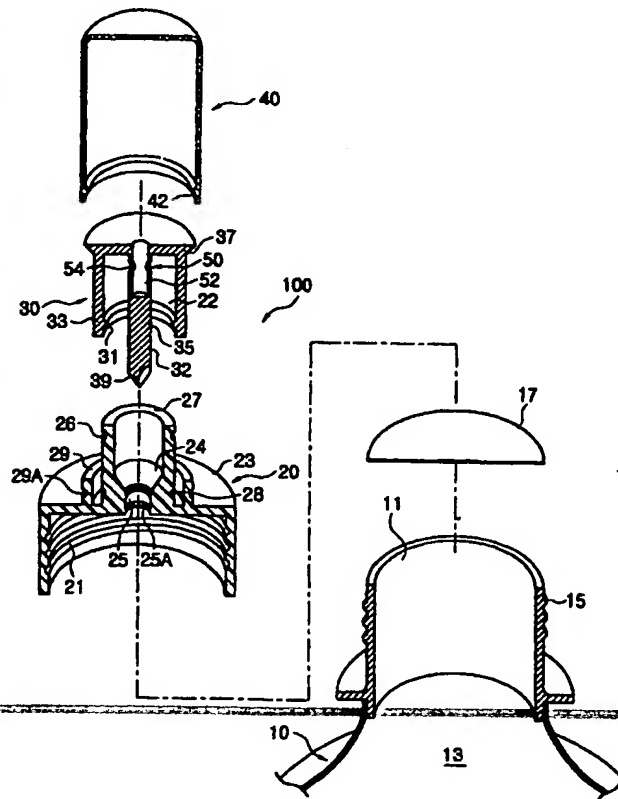
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[Continued on next page]

(54) Title: AN OPENING AND CLOSING DEVICE OF CLOSURE RECEPTACLE FOR FLUID



(57) Abstract: An opening and closing device of the closure receptacle for fluid is disclosed. The disclosed device comprises a body having an engagement part for engaging with the opening of the closure receptacle; a cover having a discharging route communicating with the opening by a discharging aperture and a cylinder protrusively formed in predetermined length from a substantially center of the body to provide an opening groove and closing groove on the outer periphery, respectively; and a sliding member having a slide body which a stopper is formed in the inner periphery thereof so as to alternatively couple with the opening groove and closing groove, a protruded sealing bar on the center of the slide body to form the discharging route and to open and close the discharging aperture alternatively by sliding it along the outer periphery of the cylinder and a discharging portion provided in slide body so as to communicate with the discharging route and discharge the contents out of the closure receptacle.

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## AN OPENING AND CLOSING DEVICE OF CLOSURE RECEPTACLE FOR FLUID

### TECHNICAL FIELD

The present invention relates to an opening and closing device of closure  
5 receptacle for fluid, and more particularly, to an opening and closing device of  
closure receptacle for fluid installed in the opening of closure receptacle containing  
fluid such as a variety of beverages or edible oil.

### BACKGROUND ART

In general, the closure receptacle for fluid has a receiving space for  
10 containing the contents, an opening formed in the top surface, a sealing foil such  
as an aluminum adhered to the top side of the opening and a cap detachably  
coupled to the opening to cover the opening blocked by the sealing foil.

However, in order to use the conventional closure receptacle, the user open  
the cap of the closure receptacle, and then take off the sealing foil adhered to the  
15 opening by hands. Through the process, the contents can flow from the opening  
of a closure receptacle. In the ways as described above, there is a disadvantage  
in that, in order to use the contents from the closure receptacle, the users have to  
go through complicated steps, for example the step for separating the opening and  
the cap, the step for separating the sealing foil from the opening and the step for  
20 rejoining the cap and the opening.

Further, another disadvantage of the conventional closure receptacle is that  
it is difficult to remove the sealing foil from the opening because of the strong  
adhesive. Furthermore, another disadvantage of the conventional closure  
receptacle is that the opening may become unhygienic since contaminants such as  
25 dust or foreign materials may adhere to the opening during the process for  
removing sealing foil from the opening of the receptacle.

### DISCLOSURE OF THE INVENTION

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slide body and at least one hole perforated on the side of the sealing bar such that the recessed part can communicate with the discharging route.

According to the present invention, the discharging portion has a plurality of perforated sucking holes radially formed on the top surface of the slide body  
5 around the sealing bar so as to communicate with the discharging route.

According to the present invention, the opening and closing device of closure receptacle for fluid further comprises a thin foil for sealing adhered to top side of the opening and a sharp part formed on the top side of the sealing bar to tear the sealing foil.

10 According to the present invention, the cover further includes at least one closing protection provided in the inner periphery of the discharging aperture.

According to the present invention, the opening and closing device of closure receptacle for fluid further comprises a sealing groove formed in the predetermined position of the outer periphery of the sealing bar to engage with the  
15 closing projection.

### BRIEF DESCRIPTION OF THE DRAWINGS

The above objectives and advantages of the present invention will become more apparent by describing in detail preferred embodiments thereof with reference to the attached drawings in which:

20 FIG. 1 is a separated perspective view schematically illustrating an opening and closing device of closure receptacle for fluid according to a preferable embodiment of the present invention;

FIG. 2 is a cross-sectional view illustrating assembled device of FIG. 1;

FIG. 3 is a separated perspective view schematically illustrating  
25 another sliding member in an opening and closing device of closure receptacle for fluid according to the present invention;

FIGS. 4 and 5 are a cross-sectional view schematically illustrating the opening and closing device of FIG. 2 in closed position and open position, respectively.

Referring to FIGS. 1 and 2, an opening and closing device 100 according to the present invention comprises a cover 20 which engage with the opening 11 of the closure receptacle 10, a sliding member 30 coupled with the cover 20 so as to slide against the cover 20, and a cap 40 which is  
5 coupled with the cover 20 so as to cover the sliding member 30.

The closure receptacle 10 is made of metal, resin or paper, and has a conventional shape such as a cylindrical or hexahedral shape, and has a receiving space 13 for containing the contents such as a beverage or edible oil. A male screw 15 is formed at the outer periphery of the opening 11. The  
10 thin foil for sealing 17 is adhering at the top side of the opening 11 by adhesive(not shown).

The cover 20 comprises a body 23 having engagement part 21, a discharging aperture 25 formed in the substantially center of body 23, a cylinder protrusively formed in predetermined length from the center of body  
15 23, and a coupling part 29 protrusively formed to space a predetermined distance from the outer periphery of the cylinder 27.

It is preferable that the engaging portion 21 is a female screw form capable of screwing in the male screw 15 of the opening 11. In here, the coupling manners of the opening 11 and the cover 20 may be threaded  
20 screw, push-pull type or the like.

The discharging aperture 25 is formed at the upper end of the body 23 and the lower end of the cylinder 27 so as to communicate with the opening 11. In the inner periphery of the discharging aperture 25 may be formed two closing projection 25A having elasticity.

25 The inner periphery of cylinder 27 has a diameter slightly more than the diameter of the discharging aperture in order to form the discharging route 25 communicated with the dispensing aperture 25. The inclined guide part 24 in the form of a funnel is provided in the upper end of the discharging aperture 25 and the lower of the inner wall of the cylinder 27. The guide part  
30 24 can guide the sealing bar 35 as will be explained in detail hereinafter.

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Therefore, the sealing bar 35 may be easily inserted into the dispensing aperture 25. And the outer periphery of the cylinder 27 has an opening groove 26 and closing groove 28, respectively.

The coupling part 29 is spaced from the outer wall of the cylinder 27 so as too not prevent the sliding member 30 from moving, protruded slightly less than the protruding length of cylinder 27 and substantially parallel with the cylinder 27. The coupling part 29 has a coupling groove 29A at the predetermined position of the outer periphery thereof.

The sliding member 30 has a slide body 33 having a stopper 31 formed in the inner periphery thereof, a protruded sealing bar 35 from the slide body 33 to open and close the discharging aperture 25 alternatively and to form the discharging route 22 as will be explained in detail above, and a discharging portion 50 provided in the slide body 33 so as to communicate with the discharging route 22.

The slide body 33 has cylindrical structure so that the sealing bar 35 is located within cylinder 27 and the stopper 31 is contacted with the outer periphery of the cylinder 27. The stopper 31 is alternatively coupled with the opening groove 26 and the closing groove 28 by moving of slide body 33. Thus, the stopper 31 may be in the form of groove and the opening groove 26 and the closing groove 28 may have a projection structure. In order to easily push-pull the sliding member 30, a protruded sill may be formed in the outer periphery of the upper end of the slide body 33.

The sealing bar 35 can form the discharging route 22 between outer periphery and inner periphery of cylinder 27 and can alternatively open and close the discharging aperture. In the top side of sealing bar 35 toward the discharging aperture is provided with the sharp part 39. The sharp part 39 may have various shape if it can tear the sealing foil 17. The outer periphery of the sealing bar 35 has two sealing groove 32 to engage with the closing projection 24A formed in the discharging aperture. In here, the sealing groove 32 and the closing projection 25A are differently located each other.

Thus, the sealing groove 32 may be formed in the inner periphery of the discharging aperture 25 and the closing projection 25A may be formed in the outer periphery of the sealing bar 35, respectively.

The discharging portion 50 is communicated with the discharging route  
5 22 to be discharged the contents of the closure receptacle 10. Thus, the discharging portion 50 has a recessed part 52 formed on the sealing bar 35 in predetermined depth from the top surface of slide body 33 and at least one side hole 54 perforated on the side of the sealing bar 35 so that the discharging route 22 is communicated with the recessed part 52.

10 As shown in FIG. 3, in the sliding member of the opening and closing device according to another embodiment of the present invention, the discharging portion 50' provided in the sliding member 30' has a plurality of perforated sucking holes 56 radially formed on the top surface of the slide body 33' around the sealing bar 35' so as to communicate with the discharging route 22.

15 As shown in FIGS. 1 and 2, the cap 40 protects the cover 20 and sliding member 30 by alternatively coupling in the outer periphery of the coupling part 29 of the cover 20, the cap 40 has a coupling projection 42 to be coupled with the coupling groove 29A in the inner periphery thereof. The coupling projection 42 and the coupling groove 29A are differently located each other.

20 An operation of the opening and closing device according to the embodiment of the present invention will be described as follows.

As shown in FIG. 2, in the closure receptacle 10 to be sold, the receiving space 13 contains the contents such as a beverage or edible oil, the sealing foil 17 is adhering to the opening 11, the cap 40 is coupled with  
25 the periphery of the cover 20. Further, the stopper 31 of the sliding member 30 is coupled with the opening groove 26. Since the sealing bar 35 is not contacted with the discharging aperture 25, the outer periphery of the cylinder 27 and the sealing bar 35, the inner wall of the slide body 33, and the outer periphery of the sealing bar have the discharging route 25,  
30 respectively.

In order to be discharged the contents contained in the closure receptacle 10, as shown in FIG. 4, the user separates the cap 40 from the cover 20, and then pushes the sliding member 30 toward the closure receptacle 10. According to the motion, as the sealing bar 35 is guided by  
5 the guide part 24, the sealing bar 35 smoothly perforates the discharging aperture 25. If the user further pushes the sliding member 30, the sharp part 39 of the sealing bar 35 can tear the sealing foil. And then, the stopper 31 is coupled with the closing groove 28. In here, even if the sealing foil 17 is torn by the sharp part 39 of the sealing bar 35, the contents contained in the  
10 receiving space 13 is not discharged into the discharging route 22 since the outer periphery of the sealing bar 35 is closely contacted with the discharging aperture 25.

As shown in FIG. 5, if the user pulls upwardly the protruded sill 37 of the sliding member 30, the stopper 31 is coupled with the opening groove 26.  
15 Thus, the sealing bar 35 is escaped from the discharging aperture 25 and the discharging route 22 is communicated with the receiving space 13 and the discharging portion 50, respectively. Therefore, the user can discharge the contents out of the closure receptacle 10 through the recessed groove 52 in the direction of arrow A in FIG.5. Further, in order to directly discharge  
20 the contents through the opening 11, the user can separate the cover 20 coupled with sliding member from the opening 11 and then strip off the torn sealing foil 17 from the opening 11 or under the adhered state, the contents may be discharged out of the closure receptacle 10.

Further, after the contents is discharged, if the user pushes  
25 downwardly the sliding member 30, as shown in FIG. 4, it prevents the contents of the receptacle 10 from passing through the closure receptacle 10 since the sealing bar 35 closes the dispensing aperture 25.

The opening and closing device of the closure receptacle for fluid according to the present invention have the following effects.

First, since the sealing bar can close or open the discharging aperture through the alternating motion of the sliding member, the easiness of use may be increased.

Second, in the case of articles which the sealing foil is adhering to the  
5 top side of the opening, since the opening and closing device of the present invention include the sharp part capable of rupturing the sealing foil on top side of sealing bar, the user can use the closure receptacle without the inconvenience and unhygienic occurred during the process for separating the cover from the opening so as to remove the sealing foil.



What is claimed is:

1. An opening and closing device of closure receptacle for fluid comprising:  
a body having an engagement part for engaging with the opening of the closure receptacle;  
5 a cover having a discharging route communicating with the opening by a discharging aperture and a cylinder protrusively formed in predetermined length from a substantially center of the body to provide an opening groove and closing groove on the outer periphery, respectively; and  
a sliding member having a slide body which a stopper is formed in the inner  
10 periphery thereof so as to alternatively couple with the opening groove and closing groove, a protruded sealing bar on the center of the slide body to form the discharging route and to open and close the discharging aperture alternatively by sliding it along the outer periphery of the cylinder and a discharging portion provided in slide body so as to communicate with the discharging route and discharge the  
15 contents out of the closure receptacle.
2. The device according to claim 1, wherein the cover includes a guide part formed in the inner periphery of the cylinder around the discharging aperture in order to guide the top side of sealing bar.
3. The device according to claim 1, wherein the cover further includes a  
20 coupling part protrusively formed from the cover body to space a predetermined distance from the outer periphery of the cylinder; and the cap capable of coupling to the outer periphery of the coupling part.
4. The device according to claim 3, wherein the device further comprises a coupling groove formed in the outer periphery of the coupling part; and a coupling  
25 projection formed in the inner periphery of the cap to couple with the coupling groove.

5. The device according to claim 1, wherein the sliding member further includes a protruded sill formed in the upper end of slide body such that the user can pull and push the sliding member.

6. The device according to claim 1, wherein the discharging portion has a  
5 recessed part formed on the sealing bar in predetermined depth from the top surface of the slide body; and at least one hole perforated on the side of the sealing bar such that the recessed part can communicate with the discharging route.

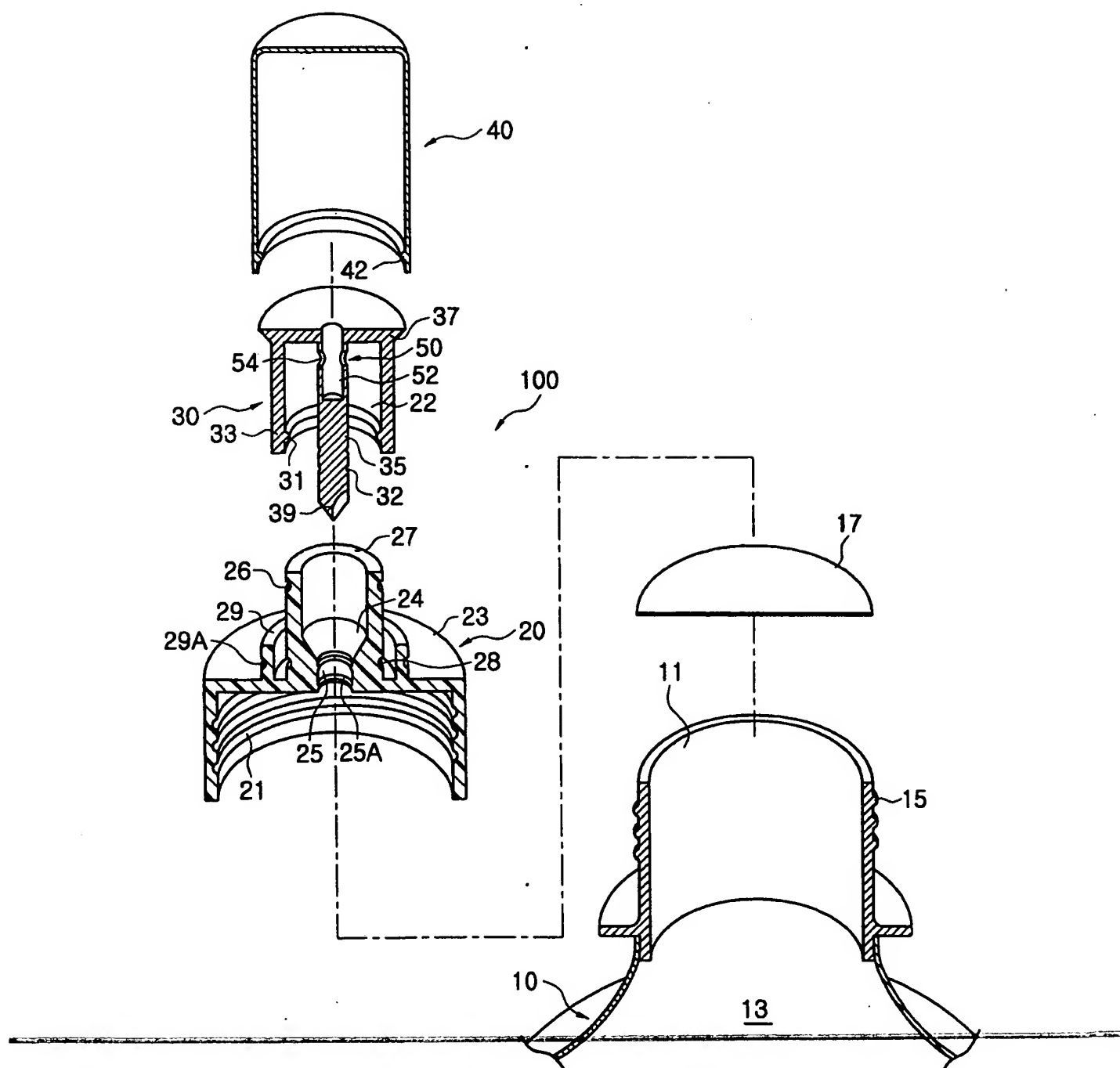
7. The device according to claim 1, wherein the discharging portion has a  
10 plurality of perforated sucking holes radially formed on the top surface of the slide body around the sealing bar so as to communicate with the discharging route.

8. The device according to claim 1, wherein the device further comprises a thin foil for sealing adhered to top side of the opening; and a sharp part formed on the top side of the sealing bar to tear the sealing foil.

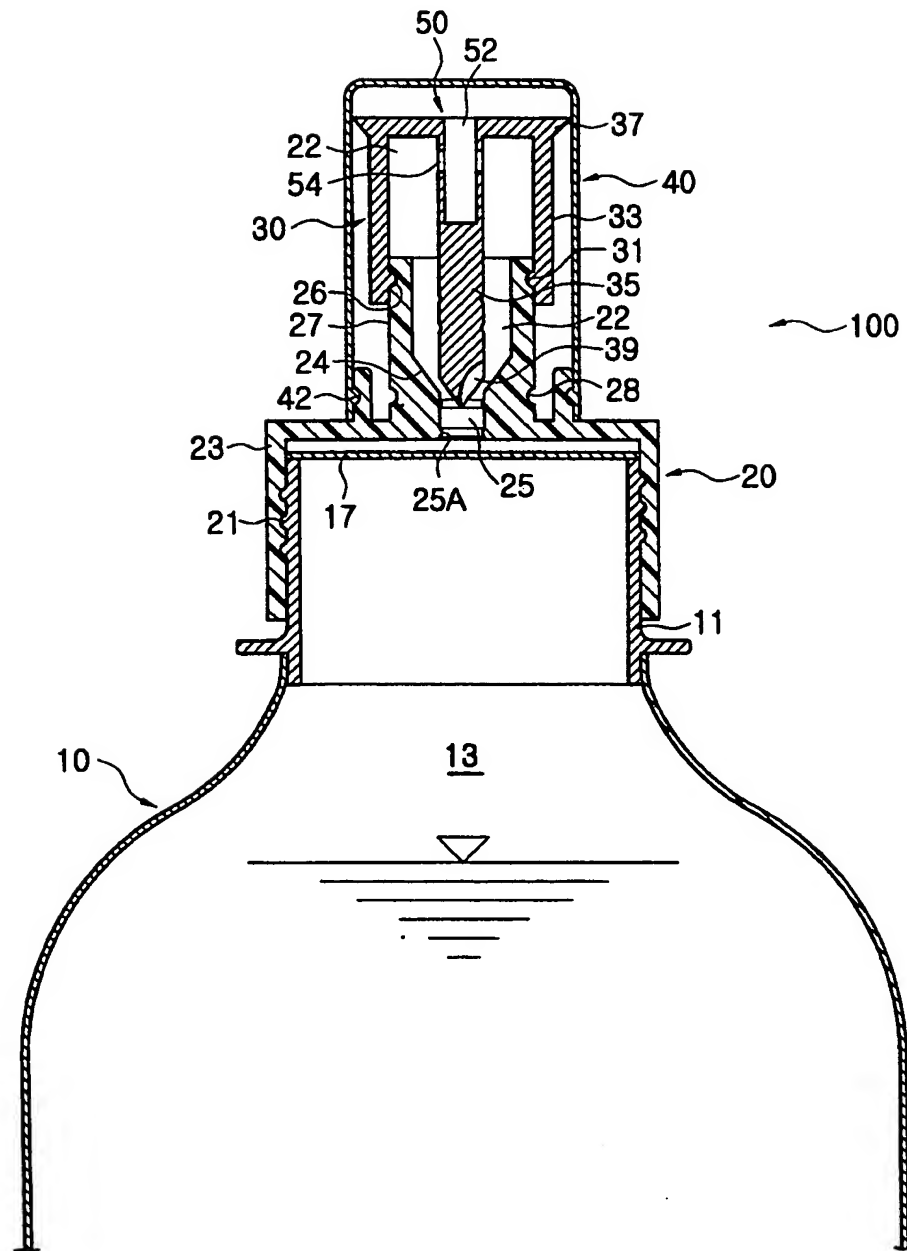
9. The device according to claim 1, wherein the cover further includes at  
15 least one closing projection provided in the inner periphery of the discharging aperture.

10. The device according to claim 9, wherein the device further comprises a sealing groove formed in the predetermined position of the outer periphery of the sealing bar to engage with the closing projection.

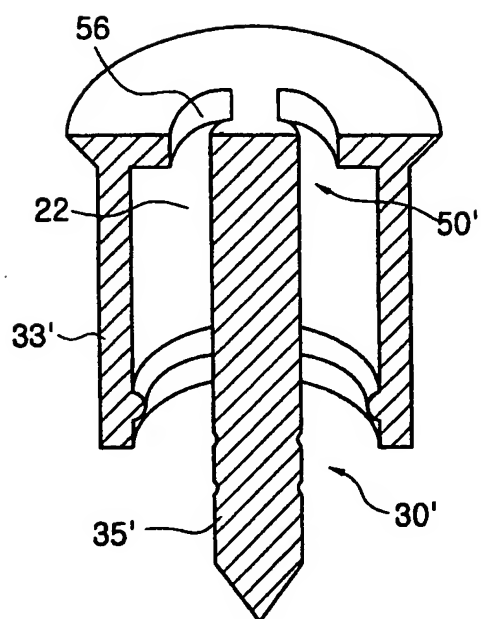
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FIG. 1



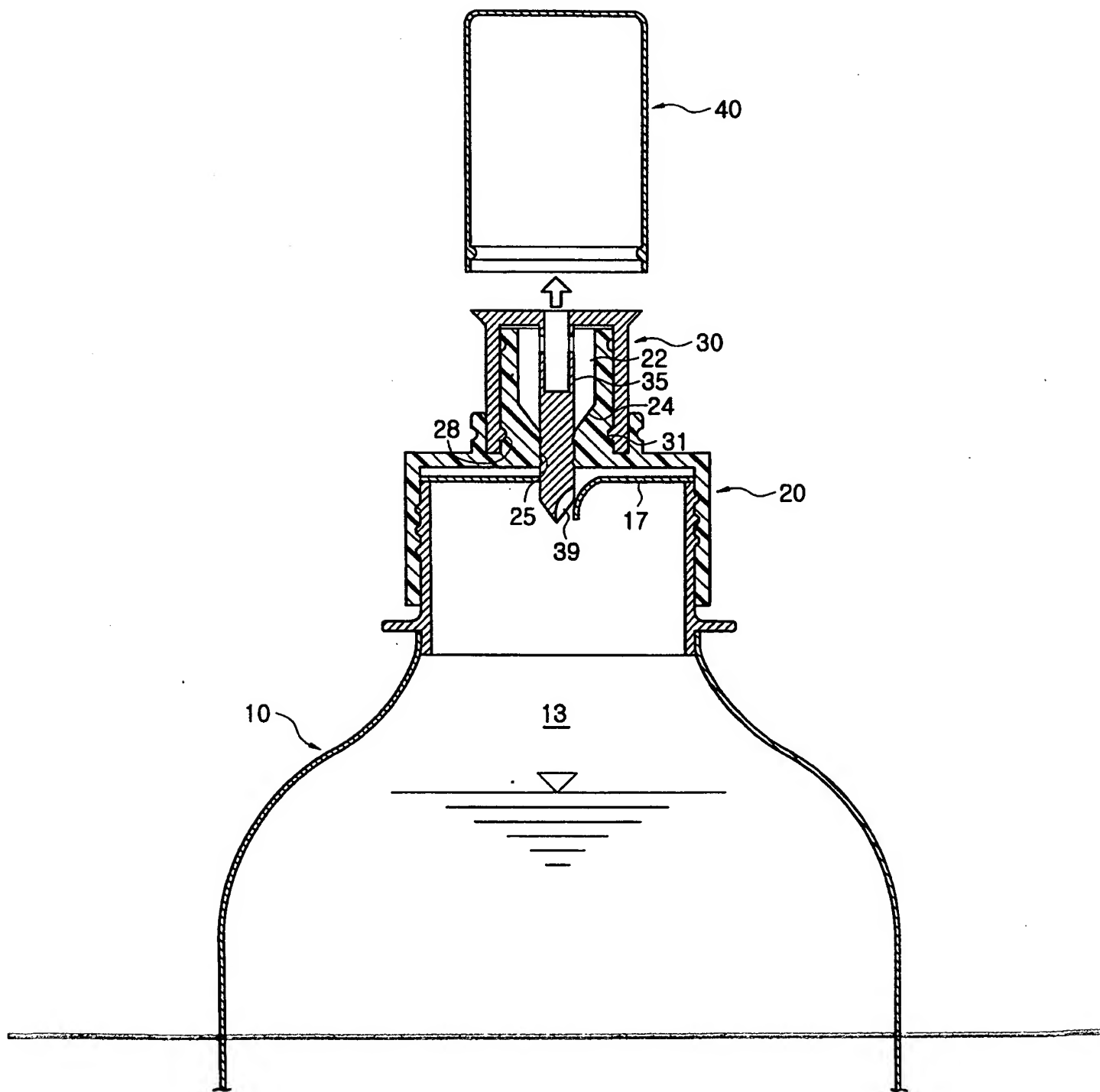
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FIG.2



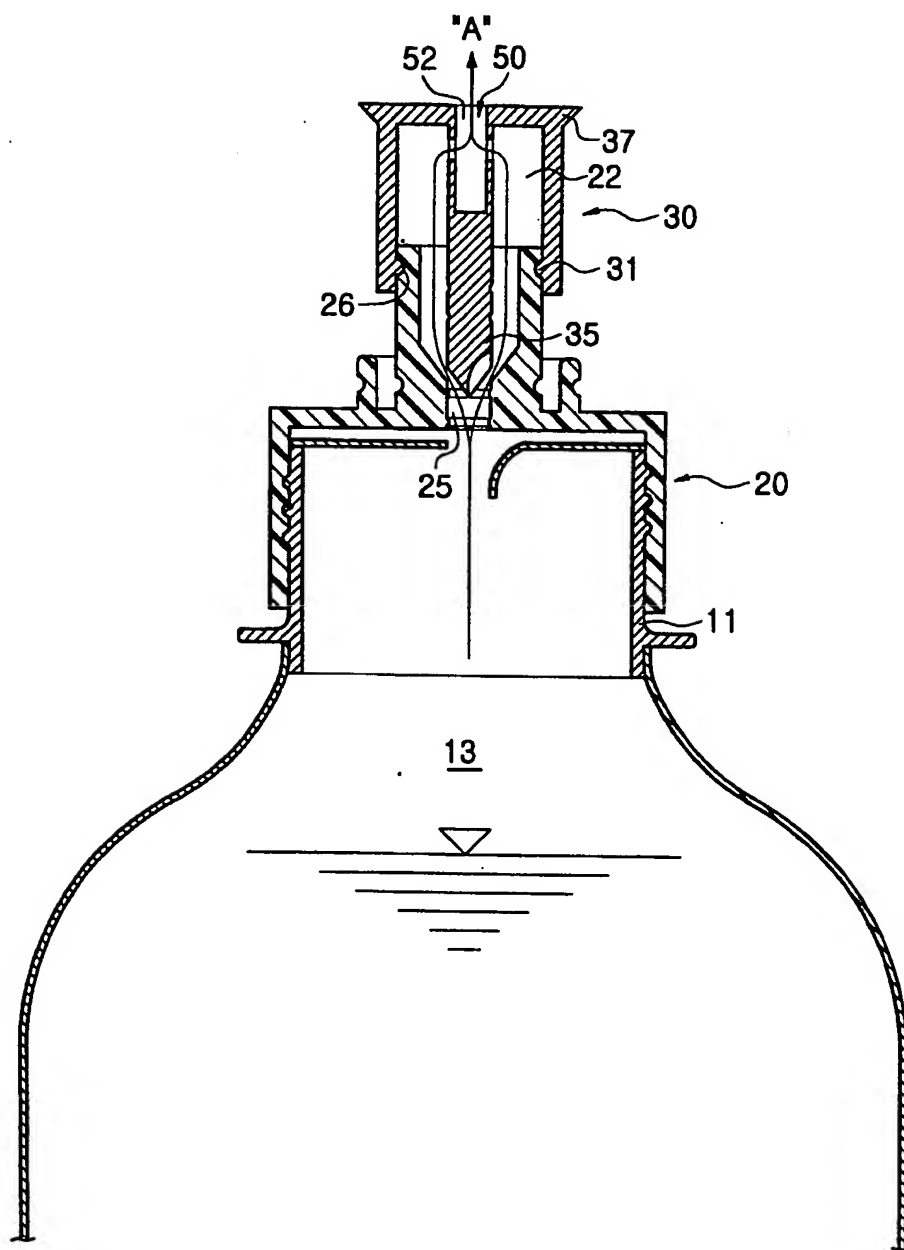
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FIG.3



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FIG. 4



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FIG.5



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR00/01323

**A. CLASSIFICATION OF SUBJECT MATTER****IPC7 B65D 51/22, B65D 51/32, B65D 41/00**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC7 B65D 51/22, B65D 51/32, B65D 41/00, B65D 47/06, B65D 47/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
KR,JP:IPC as aboveElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
ESPACENET, IBM patent search, Kipo new patent search system ; "cap", "slide bar", "hole", "cap", "spout"**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 10-175989 A (Omi Hidehico) 30 June 1998 See the abstract and claims See Figure 1,2	1,2
Y	JP 10-258870 A (Minamoto Masaaki, Nakaizumi Masahiro) 18 March 1997 See the abstract and Figure 1-(a),(b)	1,2
A	FR 2617825 A1 (Scries Georges) 6 July 1987 See the whole document	1,2,8

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

## \* Special categories of cited documents:

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Date of the actual completion of the international search

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